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| 10/615,574 | 07/08/2003 | Arthur J. Redfern | TI-34861 | 8985 |
| 23494 7590 02/03/2009 TEXAS INSTRUMENTS INCORPORATED P O BOX 655474, M/S 3999 DALLAS, TX 75265 | | | | |
| EXAMINER | | | | |
| KASRAIAN, ALLAHYAR | | | | |
| ART UNIT | | PAPER NUMBER | | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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uspto@ti.com

Office Action Summary

Application No.

10/615,574

Applicant(s)

REDFERN ET AL.

Examiner

ALLAHYAR KASRAIAN

Art Unit

2617

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 November 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8, 14 and 15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 8, 14 and 15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Remarks

1. The present Office Action is in response to Applicant's amendment filed on 11/05/2008. **Claims 8, 14 and 15** are now pending in the present application. **This Action is made FINAL.**
2. The objection to specification is withdrawn. The "amendments to the specification" received on 11/05/2008 is acknowledged by the Examiner.
3. On **claims 13 and 14**, encoding the hyperframe is considered to be done by a processing machine (and/or hardware such as digital signal processor, see the last paragraph of page 4 of the specification), and therefore the claims fall within one the four statutory categories of invention recited in 35 USC § 101: process, machine, manufacture and composition of matter.

Response to Arguments

4. Applicant's arguments filed 11/05/2008 have been fully considered but they are not persuasive.

On page 6 of the Applicant's remarks/argument with respect to the objection specification, Applicant indicates to the last paragraph of page 4 of the specification for disclosing the claimed computer readable medium on the last office action. Examiner notes the claimed computer readable medium is broader than the disclosed the programmable devices on the indicated paragraph. Therefore, the objection and rejection with regards to the computer readable medium are still applied to the previous claims and specification.

On page 7 of the Applicant's arguments/remarks, under claim rejections section for 35 USC § 102 section, the second paragraph, Applicant argues, "Chow has been assigned to Texas Instruments Incorporated - assignee of the instant application." Examiner notes the claims are rejected based on 35 USC § 102(b), which specifies "the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States."

On page 7 of the Applicant's arguments/remarks, under claim rejections section for 35 USC § 102 section, the third paragraph, Applicant argues, "Examiner Points to Figure 4B of Chow but totally ignores the limitations of the claim[s] for 'two-band duplex' and 'hybrid duplex' method." Examiner respectfully disagrees with Applicant, and considers the arrangements of upstream and downstream frames as hybrid or two band duplexing.

On page 8 of the Applicant's arguments/remarks, under claim rejections section for 35 USC § 102 section, the last paragraph, Applicant argues, "Embodiments of the instant invention are drawn to a hybrid duplexing method where upstream and downstream data transmission occurs at the same time in some of the symbols, which is never the case in Chow's patent. Chow uses different lines of service." Examiner respectfully disagrees with applicant, and once again the frame or symbol arrangements as type 1, type 2 or type 3, could be optional, and one could consider an arrangement of frames to have upstream and downstream symbols at the same time (without considering the specific arrangements disclosed by Chow).

Claim Objections

5. **Claim 8** is objected to because of the following informalities:

a) On **line 2 of claim 8**, replace “an” with “—a—” after “having” (see page 4. the first paragraph under the overview section);

b) On **line 5 of claim 8**, delete “hybrid” before “time”;

Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. **Claim 8** is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: the relationship between the first and second limitations (using TDD in the lower part of the spectrum and FDD in the upper part of spectrum) and the rest of limitations, specifically to the type 1, 2 and 3 symbols.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the Examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the Examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. **Claims 8 and 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Chow (US Patent # 6009122)** in view of **Dean et al. (US Patent # 5881369)** (hereinafter Dean).

Consider **claim 8**, Chow discloses a method of initialization for a multitone system operating in a spectrum having an lower part and an upper part, comprising:

comparing a first direction and a second direction data rates for a two-band duplex to threshold data rates (FIG. 11, col. 16 lines 36-54 and col. 17 lines 1-4); and

when said data rates fail to meet said threshold data rates, comparing data rates for a hybrid duplex to said threshold data rates, hybrid duplexing by encoding hyperframes with structure (FIG. 11, col. 16 lines 36-54 and col. 17 lines 1-4; FIG. 7, col. 13 lines 15-17 for hybrid circuit 706):

wherein a first set of are a plurality of type 1 symbols, for transmission in said first direction in a first set of subchannels and transmission in said second direction in a second set of

subchannels where said first and said second directions differ and said first set of subchannels and second set of subchannels are different (FIG. 4B for 9-1-9-1 mixture, col. 9 lines 14-31, col. 10 lines 21-56; consider a first set of symbols as frames with subchannels in downstream direction and subchannels in frames with A, B and C in upstream direction);

wherein a second set of symbols are a plurality of type 2 symbols, where transmission is only in the first direction in the first set of subchannels (FIG. 4B for 9-1-9-1 mixture, col. 9 lines 14-31, col. 10 lines 21-56; consider subchannels in frames D, E, F and G in upstream direction as the second set of symbols); and

wherein a third set of symbols are a plurality of type 3 symbols, where transmission is only in the first direction in subchannels different from that of the set of subchannels used for type 2 symbols (FIG. 4B for 9-1-9-1 mixture, col. 9 lines 14-31, col. 10 lines 21-56; consider subchannels in frames H and J in upstream direction as the third set of symbols).

However, Chow fails to disclose using a hybrid time division duplex (TDD) in the lower part of the spectrum; using frequency division duplex (FDD) system in the upper part of the spectrum.

In the same field of endeavor, Dean discloses using a hybrid time division duplex (TDD) in the lower part of the spectrum; using frequency division duplex (FDD) system in the upper part of the spectrum (abstract, col. 5 lines 20-28 and lines 58-67 to col. 6 lines 1-2).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate managing FDD and TDD modes for lower and upper bands of the frequency spectrum as taught by Dean to the method of transmitting and receiving data on an ADLS system as disclosed by Chow for purpose of operating on both TDD and FDD

modes.

Consider **claim 15**, Chow as modified by Dean discloses the claimed invention as **applied to claim 8 above**, and in addition Chow further discloses the first direction is downstream, from a central office and the second direction is upstream, to the central office (FIG. 4B, col. 1 lines 31-45).

10. **Claim 14** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Chow (US Patent # 6009122)** in view of **Kumar (US Patent Application Pub. # 20030086487)**.

Consider **claim 14**, Chow discloses a method of initializing a discrete multitone system, comprising:

determining a target data rate for the first direction and the second direction including type 1 and type 3 symbols in the signal-to-noise (SNR) measurement phase (FIG. 11 for steps 1102 and 1104, col. 16 lines 36-54; FIG. 4B for any arrangement between frame to define type 1, 2 and 3);

performing a bit loading for the type 1, type 2 and type 3 symbols to determine the data rates supported in the first direction and the second direction for each type of symbol (FIG. 11 for steps 1108 and 1110, col. 16 lines 55-67); and

hybrid duplexing by encoding the hyperframe, said encoding comprising (FIG. 5, col. 11 lines 27-67, col. 12 lines 1-26):

choosing all type 1 symbols if the type 1 symbol is able to meet the target data rates for the first direction and the second direction (FIG. 11 for step 1106, col. 16 lines 36-54, selecting a superframe format); and

choosing a mix of type 1, type 2 and type 3 symbols to most closely meet the target data rates for the first direction and the second direction if all type 1 symbols are unable to meet the target data rate (FIG. 11 for step 1106, col. 16 lines 36-54, selecting a superframe format).

However, Chow fails to disclose determining an allowed set of power spectral density (PSD) masks for a first direction and a second direction of a type 1, type 2 and type 3 symbols,

In the same field of endeavor, Kumar discloses determining an allowed set of power spectral density (PSD) masks for a first direction and a second direction of a type 1, type 2 and type 3 symbols (FIGS. 3, 4 and 5 par. 0016, and description in par. 0010-0015, consider any combination between a+x channels to define type 1, type 2 and type 3).

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

- a. Arnold et al. (U.S. Patent # 5475677) disclose Compatible licensed and unlicensed band portable handset unit for TDMA wireless communications system.
- b. Ginis et al. (U.S. Patent Application Publication # 20030086514) disclose Dynamic digital communication system control.
- c. Seagraves (U.S. Patent Application Publication # 20010031016) disclose

Enhanced bitloading for multicarrier communication channel.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any response to this Office Action should be **faxed to** (571) 273-8300 **or mailed to**:

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Hand-delivered responses should be brought to

Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

13. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Allahyar Kasraian whose telephone number is (571) 270-1772. The Examiner can normally be reached on Monday-Thursday from 8:00 a.m. to 5:00 p.m.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Rafael Pérez-Gutiérrez can be reached on (571) 272-7915. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free) or 571-272-4100.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist/customer service whose telephone number is (571) 272-2600.

*/Allahyar Kasraian/
Examiner, Art Unit 2617*

A.K./ak

*/Rafael Pérez-Gutiérrez/
Supervisor Patent Examiner, Art Unit 2617*

January 26, 2009